Science Fair Student Guide

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_ Approved Title\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Choose your topic for the science fair project. You will need to start your log book at this time. Everything except your library research is recorded here. You may also need to complete specific ISEF forms before experimentation based on the specifics of your topic.
2. The purpose of your project should be to solve a problem that will help others or allow them to learn from it.
3. Formulate a hypothesis. This should predict what you think the solution might be. It should be in an “if”, “then” statement format. Example: *If a plant is exposed to music, then it will grow faster.*
4. Research your topic using encyclopedias, books, news articles, magazines, on-line sources but remember to keep a bibliography. Do not copy directly from any source, which is considered plagiarism.
5. Plan an experiment to test your hypothesis. It should include all materials, amounts, equipment and the step-by-step procedures. It should identify the variables and the constants as well as the control and test groups. **All measurements must be in metric.**
6. Carry out your experiment, record all results, data, conclusions, etc. in your logbook.
7. Write your abstract. This should be a 200-250 word summary of your entire project, results and applications. **The abstract must be done on the form provided.**
8. Prepare your final report and display board.

# Logbook

* Use a composition book or small spiral bound notebook.
* Your must use permanent blue or black ink.
* If you make a mistake neatly draw a line through it and write a correction under it.
* Label the top of each page with the heading.
* Only put one topic on each page**.**
* Do **not** write the research in the logbook but do list the resources you used in your bibliography.
* Everything you do must be written here. This is the rough draft of your final report.

# Page Headings for Logbook

* 1. Title
  2. Timesheet ( Date – Description of Activity – Time Spent)
  3. Purpose
  4. Bibliography
  5. Hypothesis
  6. Materials
  7. Procedures
  8. Data and Charts
  9. Analysis
  10. Conclusion
  11. Applications
  12. Recommendations
  13. Acknowledgements

## Research

This is information which you have gathered from at least three different sources: books, magazines, science journals, encyclopedias, and internet sources. Research must be summarized in your own words – *plagiarism is not allowed.* **If** it is vital that you use words directly form a source you must place quotation marks around it and give the source credit for the information. This part of your report should be typed or written clearly in ink. You should only use one side of the paper and it should be free of all errors such as grammar, punctuation and spelling. Again, this is the one section that should not be in your logbook.

### Bibliography Examples

#### Book

Author (last name first). Title of Book (should be underlined). City of publisher: Name of publisher, Year of publication.

#### Magazine or Article

Author (last name first). “Title of Article” (should be in quotes). Title of magazine or journal (should be underlined), date of magazine (day, month & year): page numbers.

#### Personal Interview

Name of person interview (last name first). City and state where the interview took place. Date (day, month and year).

#### Encyclopedia

“Title of Article” (in quotes). Title of the Encyclopedia (Underlined). Year of the edition, Volume Number.

#### Internet

Author (last name first),” Title of article or research” (in quotes). Web address.

### Final Report

The following items are in the order they must appear in the report. The report should be typed, if possible. If not, it must be written legibly in black or blue ink. Proper spelling, grammar, and punctuation must be evident. You should NOT write using a “first person point of view”. (**Not** I, me, we, etc., except in the Acknowledgements) Have someone proofread for you and then correct all errors before turning it in. Each step in the report is to have its own page. You will want extra copies of certain sections for these must be mounted on your display board.

1. **Title Page** \*
2. **Abstract** \* - A summarized version of the entire project. This is a three-paragraph report on what you were trying to do, how you did it, and what your conclusions were. The abstract is written in the **past tense.** A suggested length is 200-250 words. The official form is available at: <http://www.societyforscience.org/isef/document/abstrct.pdf>
3. **Table of Contents**
4. **Purpose**\* – This statement describes exactly what the experiment is investigating.\* It should be stated in the form of a question such as, “*Does fertilizer affect the growth of a plant?”.*
5. **Library research** – 2 or 3 pages summarized from your sources and in your own words.
6. **Hypothesis\*** – This statement predicts what you think will be the result of the experiment. It should be stated “If….then,” for example “*If salt is added to fresh* *water, then the water will take longer to freeze*.”\*
7. **Materials\*** – A list of equipment and supplies needed to do your experiment. Exact amounts should be given and remember that all quantities should be in metrics.\*
8. **Procedure\*** – A numbered explanation of how to do the experiment. You must indicate what the experimental variable and control variables are. Someone should be able to duplicate your experiment from this section of your report.\*
9. **Data\*** – Observations made during the experiment which are written out in the logbook and then compiled into charts, tables and/or graphs. This could include information such as measurements from numerous trials which are then averaged. Photos at various stages in the experiment can be added (keep the researcher out of the photographs). \*
10. **Analysis\*** – This is the written section which explains what your pictures, charts, and graphs show. \*
11. **Conclusion\*** – State whether your hypothesis was supported or not supported by the data. It is okay for an experiment to prove your hypothesis incorrect. If this happens be sure to explain why.\*
12. **Applications** – Explain the importance of your experiment. Why was it useful to research this information?
13. **Recommendations** - Analyze ways you could improve on the design, procedures, or conditions that could affect the outcome of the experiment. Any unexpected data could be added here.
14. **Acknowledgements** – This is the only place in the entire report that you may use I or me. It is here that you thank those people that helped you with your project.

Please note that all above items marked with an **asterisk (\*)** must be copied & mounted on the display board.

### Reprint File

If you copied articles from magazines, books, encyclopedias, or downloaded information from the internet, these must be kept in a separate folder. Highlight the sections you used as a reference. These should be available for the judges to read to make sure you did not plagiarize.

### Display Board

Listed below are 2 acceptable layouts for a science project display board. Please note that items listed with an asterisk (\*) are required to be in the shown location.

Title

Purpose Procedure

Hypothesis Data: Analysis

Drawings

Photos

Charts/Graphs

\*Abstract\* \*Conclusion\*

Title

Procedure Purpose Data:

Drawings/Photos

Charts/Graphs

Materials Hypothesis

\*Abstract\* Analysis \*Conclusion\*